1) plot a histogram,
10, 13, 18, 22, 27, 32, 38, 40, 45, 51, 56, 57, 88, 90, 92, 94, 99.

Bins = 5
Bin size = 20

Frequency.
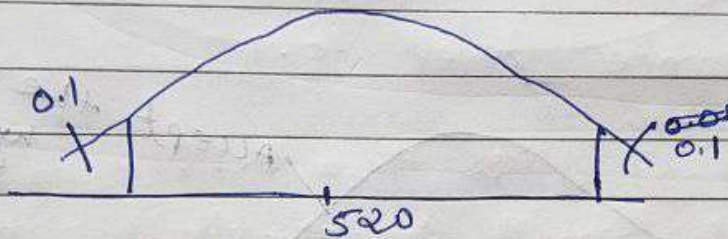
8
7
6
5
4
3
2
1

0   20   40   60   80   100

Data.

2) In a quant test of the CAT Exam, the population standard deviation is known to be 100. A Sample of 25 test taken has a mean of 520, construct an 80% CI above the mean.

Ans→ $\sigma = 100$ $n = 25$ $\bar{x} = 520$ $CI = 80\%$.

$$\alpha = 1 - CI$$
$$\alpha = 1 - 0.80$$
$$\underline{\alpha = 0.2}$$

Point Estimate ± margin of Error

$$\frac{Z_{0.2}}{2} = Z_{0.1}$$

$$\bar{x} \quad \pm \quad Z_{\alpha/2} \frac{\sigma}{\sqrt{n}}$$

$$Z_{0.1} = 1.28.$$
$$[Z \text{ table}]$$

$$\text{Lower fence} = \bar{x} - Z_{\alpha/2} \frac{\sigma}{\sqrt{n}}$$

$$= 520 - 1.28 \left(\frac{100}{\sqrt{25}}\right)$$

$$= 520 - 1.28 (20)$$
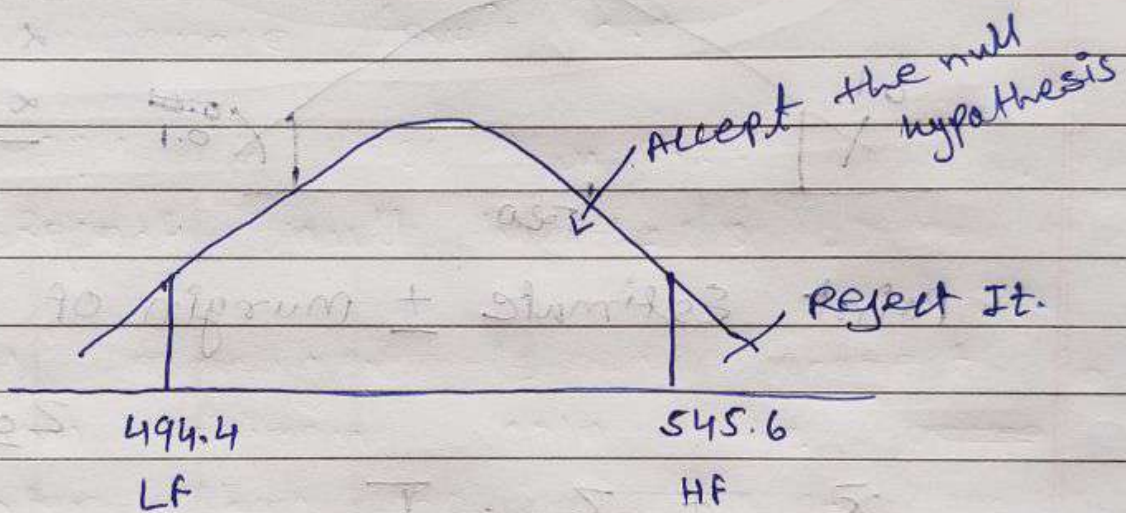
$$= 520 - 25.6$$

$$\text{Lower fence} = 494.4$$

Higher fence $= \bar{x} + Z_{\alpha/2} \dfrac{\sigma}{\sqrt{n}}$

$$= 520 + 1.28 \left(\dfrac{100}{\sqrt{25}} \right)$$

$$= 520 + 1.28 (20)$$

$$= 520 + 25.6$$

Higher fence $= \bar{x} = 545.6$

494.4
Lf

545.6
HF $\bar{x}$

Accept the null hypothesis

Reject It.

3) A car believes that the percentage of citizens in city ABC that owns a vehicle is 60% or less. A Sales munuger disagrees with this. He conducted a hypothesis testing Surveying 250 residents & found that 170 residents responded yes to owning a vehicle.

a) State the null & alternative hypothesis.
b) At a 10% significance level, is there enough evidence to support the idea that vehicle owner in ABC city is 60% or less.

Ans $n = 250$ $x = 170$ $\hat{p} = \dfrac{170}{250} = 0.68$

                    $P = 0.6 = 60\%$

$H0 = P \leq 0.6$ $q = 0.4$ one tail.

$H_1 = P > 0.60$ $\alpha = 0.1$

$q \neq 0.4, \quad P \neq 0.60.$

$$Z = \frac{\hat{p} - P \neq}{\sqrt{\dfrac{P \neq q \neq}{n}}}$$

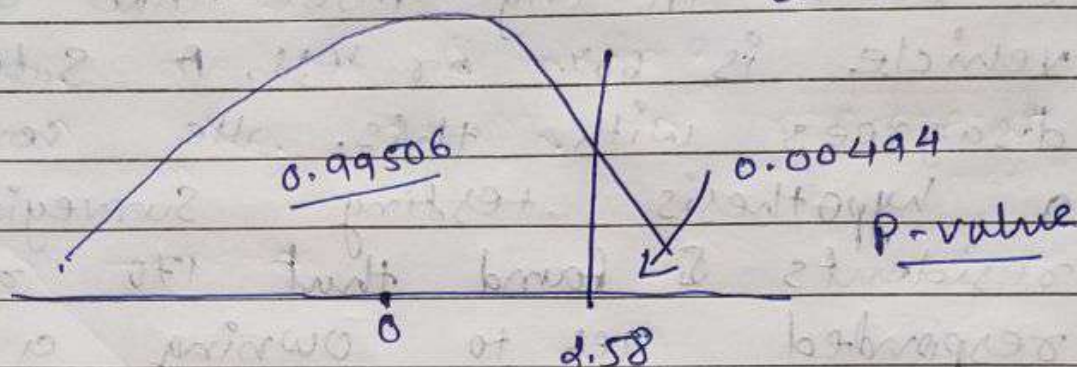$$= \frac{\dfrac{170}{250} - 0.6}{\sqrt{\dfrac{(0.60)(0.40)}{250}}}$$

$$= \frac{0.68 - 0.6}{\sqrt{0.00096}}$$

$$= 2.59$$

$Z_0 = 2.5$

Z table $= 0.99506$

0.99506   0.00494

p-value

0   2.58

→ Significance level = 0.1

→ 0.004 is less than 0.10.

→ Reject null hypothesis

Sales manager B was correct in this region citizen own the ~~more~~ Greater than P 60.

A) What is the value of the 99 percentile?
2, 2, 3, 4, 5, 5, 5, 6, 7, 8, 8, 8, 8, 8, 9, 9, 10, 11, 11, 12.
$n = 20$

value $= \dfrac{\text{percentile} \times (n+1)}{100}$
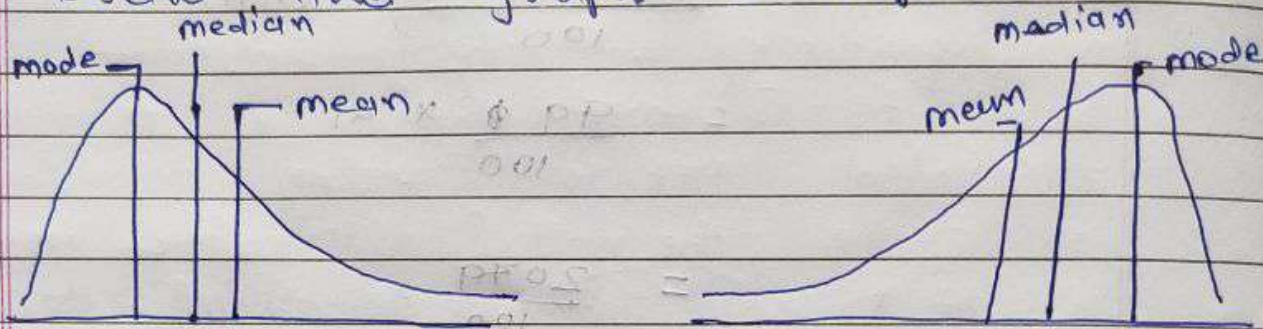
$= \dfrac{99 \times 21}{100}$

$= \dfrac{2079}{100}$

$= 20.79.$

value of 99 percentile is $= \underline{12}$

5) in left & right-skewed data, what is the relationship between mean, median & mode?

Draw the graph to represent the same

Right-skewed
positive skewed
mean > median > mode

Left-skewed
negative skewed
mode > median > mode

* Right skewed Eg - wealth Distribution.

* Left skewed E.g - Life span of Human.

also   mode = 3median - 2mean.